

**DEVELOPMENT AND OPERATIONS OF THE
ASTROPHYSICS DATA SYSTEM**

NASA Grant NCCW-0024

Annual Report - Report No. 1

For the Period 1 October 1994 through 31 July 1995

Principal Investigator

Dr. S. S. Murray

May 1996

Prepared for

**National Aeronautics and Space Administration
Washington, D.C. 20546**

**Smithsonian Institution
Astrophysical Observatory
Cambridge, Massachusetts 02138**

<p>The Smithsonian Astrophysical Observatory is a member of the Harvard-Smithsonian Center for Astrophysics</p>
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**The NASA Technical Officer for this grant is Dr. G.R. Riegler Code: SZE
NASA Headquarters, Washington DC 20546**

ASTROPHYSICS DATA SYSTEM

NASA Grant NCCW-0024

Monthly Progress Report No. 32 for October 1994

Prepared for

**National Aeronautics and Space Administration
Astrophysics Division - Code SZ**

**Smithsonian Institution
Astrophysical Observatory
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Achievement: _____ G. Eichhorn (SAO)

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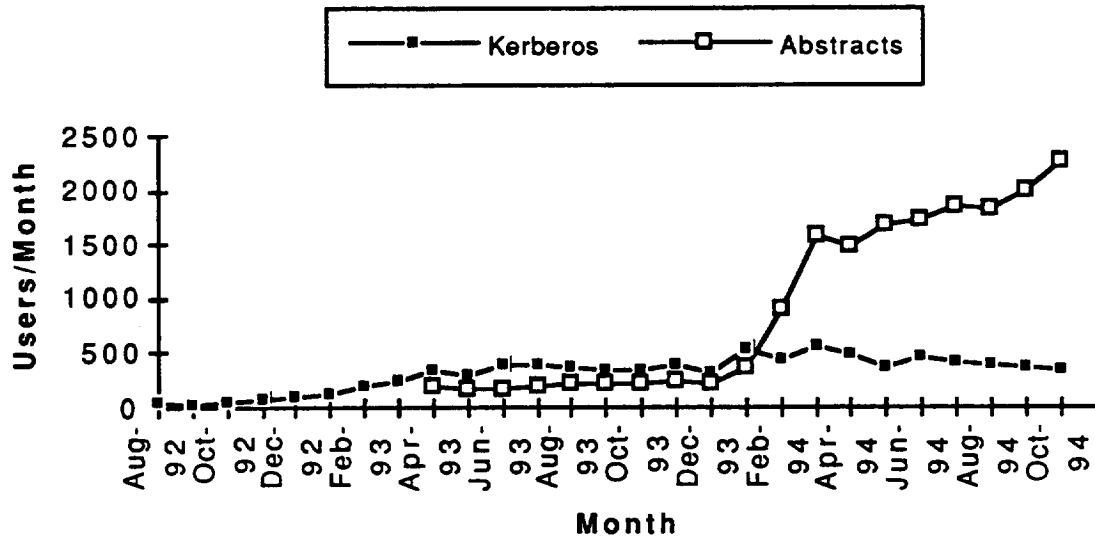
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ASTROPHYSICS DATA SYSTEM

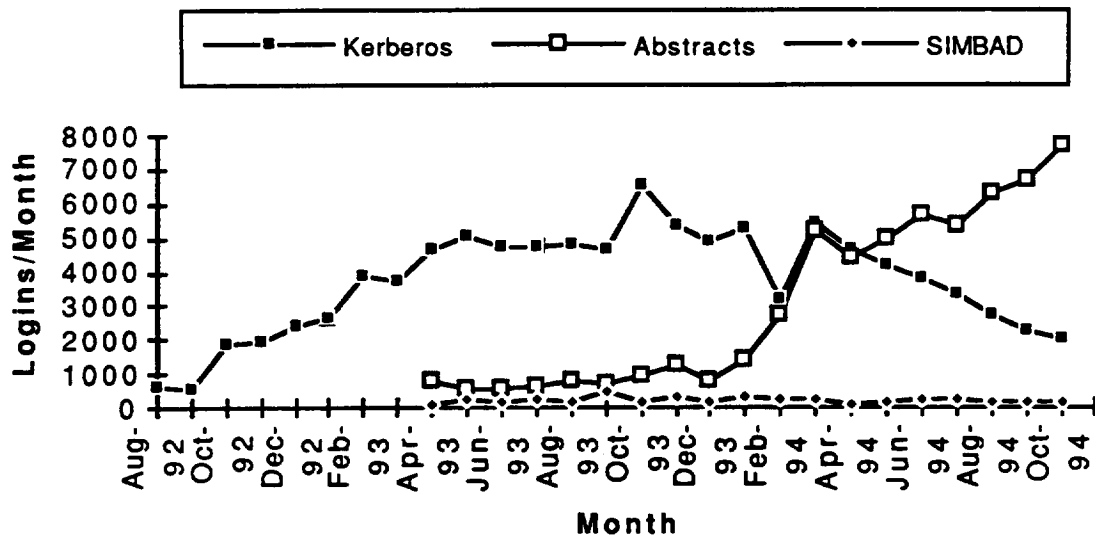
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Status as of: 1 November, 1994

Number of Distinct Users



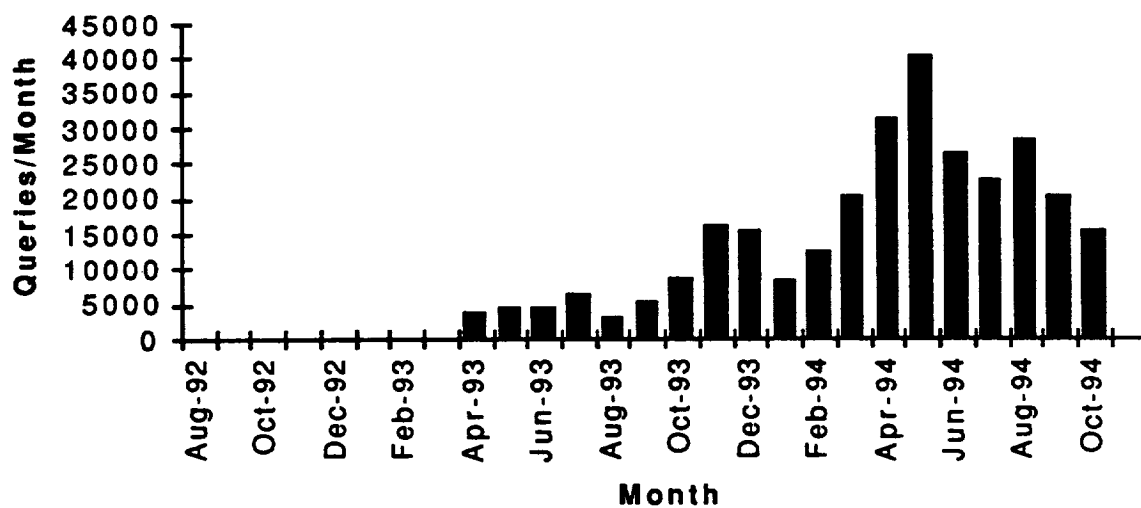
Number of Logins



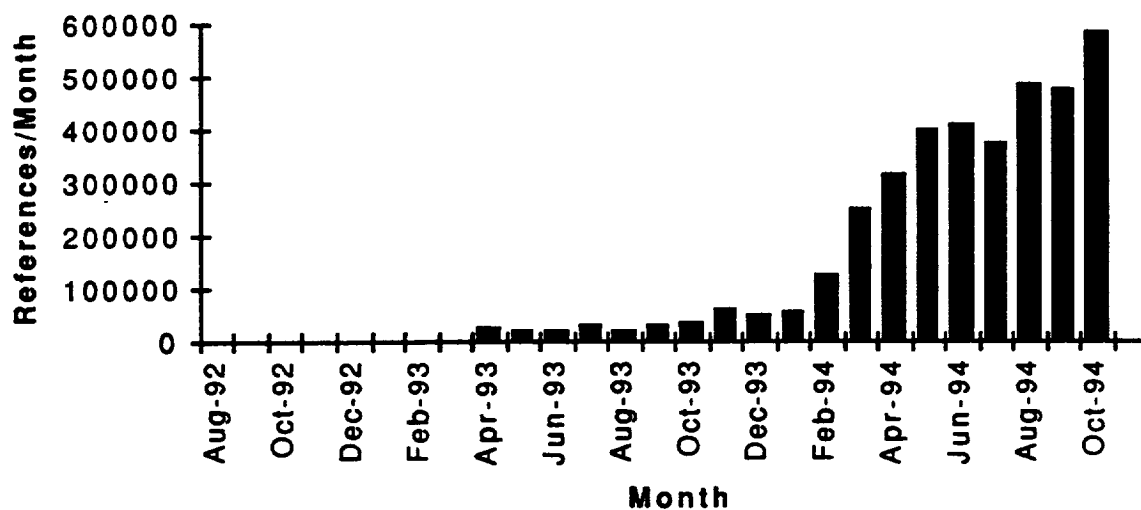
Approved: _____ S. Murray
Achievement: _____ G. Eichhorn (SAO)

Status as of: 1 November, 1994

Number of Abstract Queries



Number of Retrieved Reference



SAO

ASTROPHYSICS DATA SYSTEM

Approved: _____ G. Eichhorn
Achievement: _____ J. Nousek (PSU)

Status as of: 1 November 1994

USER COMMITTEE

PSU:

- Nothing to report

SAO

ASTROPHYSICS DATA SYSTEM

Approved: _____ G. Eichhorn
Achievement: _____ J. Stoner (ESI)

Status as of: 1 November 1994

SYSTEM INTEGRATION

TASKS ACCOMPLISHED:

- Nothing to report.

Approved: _____ G. Eichhorn
 Achievement: _____ J. Good (IPAC)

Status as of: 1 November 1994

OPERATIONS

ADS USER/USAGE STATISTICS:

	IPAC	IUE	PSU	SAO	HEASRC	STSCI	CASA	EUVE	NSSDC	APS
startup :	8		1	8	3	3	1		1	13
query :	362		2	61	58	88	40		12	358
schema :	348		2	61	53	86	40		12	335
retrieve :	3182		2	91	324	2152	92		20	51537
abort :	334		2	60	55	84	39		12	319
report :	2368		1747	1755	1317	1697	380		1889	1762

- startup* - Gives the number of hard startx ups of the SQLserver at the given node location
- query* - Records how many queries users sent to that particular node.
- schema* - Retrieves the query result file format (i.e., table header and number of records found). It therefore represents the number of successfully completed queries (though not necessarily transferred back to the user).
- retrieve* - Records all user requests to bring data from a successful query back to the user location. Data is returned one screen at a time, and a retrieve is issued for each screen of returned data, whether that screen has one or more lines of data.
- abort* - Records each time a query session ends. Currently, this can signal either that the user requested a termination or that all the data had been transferred.
- report* - Records the number of inquiries about the current status of the SQLserver program. Such inquiries can only be issued by the srvadm program.

Abstracts

user	logins	queries	short	long	list
2264	7718	15380	559351	25765	1920

- users* - Number of distinct users using the abstract service
- logins* - Number of logins into the abstract service
- queries* - Number of queries sent to the abstract service (one specification of authors, keywords, titles etc is one query. One query may return thousands of abstracts).
- short* - Number of lines of short abstract information retrieved (authors and titles).
- long* - Number of complete abstracts retrieved (authors, titles, keywords, author affiliation, journal information, abstract text).

SAO

ASTROPHYSICS DATA SYSTEM

Approved: _____ G. Eichhorn
Achievement: _____ T. Snow (CASA)

Status as of: 1 November 1994

SUPPLIERS OF DATA (Cont'd)

CASA

TASKS ACCOMPLISHED:

- Nothing to report

SAO

ASTROPHYSICS DATA SYSTEM

Approved: _____ G. Eichhorn

Status as of: 1 November 1994

Achievement: _____ S. Drake (HEASARC/GSFC)

SUPPLIERS OF DATA (Cont'd)

HEASARC/GSFC

TASKS ACCOMPLISHED:

- Nothing to report

SAO

ASTROPHYSICS DATA SYSTEM

Approved: _____ G. Eichhorn
Achievement: _____ W. Martin (NIST)

Status as of: 1 November 1994

SUPPLIERS OF DATA (Cont'd)

NIST

TASKS ACCOMPLISHED:

- Nothing to report

SAO

ASTROPHYSICS DATA SYSTEM

Approved: _____ G. Eichhorn
Achievement: _____ M. Garcia(SAO)

Status as of: 1 November 1994

SUPPLIERS OF DATA (Cont'd)

SAO

TASKS ACCOMPLISHED:

- Nothing to report

ASTROPHYSICS DATA SYSTEM

NASA Grant NCCW-0024

Monthly Progress Report No. 33
for November 1994

Prepared for

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Astrophysics Division - Code SZ

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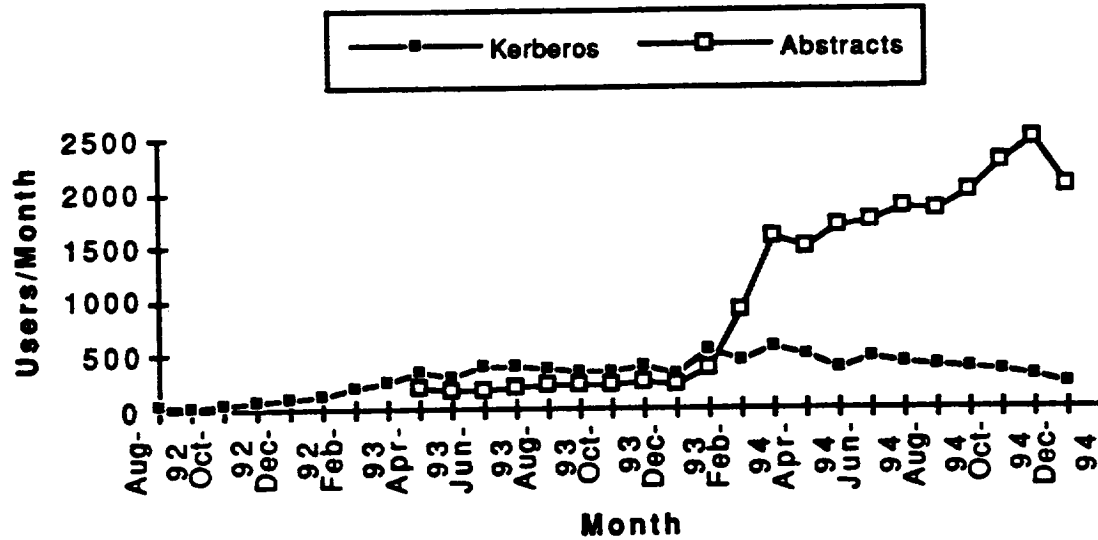
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ASTROPHYSICS DATA SYSTEM

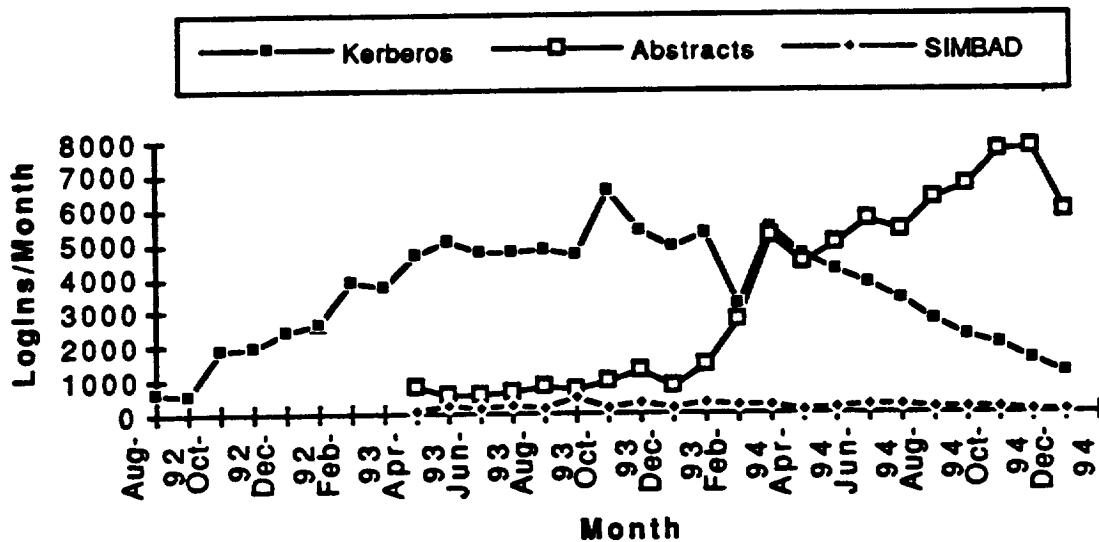
Approved: _____ S. Murray
Achievement: _____ G. Eichhorn (SAO)

Status as of: 1 January, 1994

Number of Distinct Users



Number of Logins



Approved: _____ G. Eichhorn
 Achievement: _____ T. Snow (CASA)

Status as of: 1 December 1994

USER SUPPORT

CASA:

TASKS ACCOMPLISHED:

- | | |
|---|------|
| - Total new users: | 24 |
| - Total new US users: | 15 |
| - Total new non-US users : | 9 |
|
 | |
| - Total registered users: | 2350 |
| - Total US users: | 1728 |
| - Total non-US users : | 622 |
|
 | |
| - Answered questions: (includes the following) | 45 |
| info_request: registration and installation requests | 6 |
| reg_forms: completed registration forms (17 from WWW) | 24 |
| info_change: requests to change status, email, | 1 |
| new_password: requests for new password (forgot old one) | 3 |
| how_to_qs: questions about how to use the ADS | |
| install_qs: questions concerning installation | |
| error_qs: questions concerning minor errors | |
| general_qs: all other questions | 6 |
| not_compat: messages concerning non-compatible systems | 1 |
| not_compat_PC: messages concerning PC's and Mac's | 2 |
| enhance_req: user suggested enhancements | |
| kudos: happy comments :-) | |
| comments: other user comments | |
| phone calls: phone calls from users | 2 |
|
 | |
| - Resolved problems: resolved major problems (series of messages) | 1 |
|
 | |
| • ADS Operational Web Server Statistics for the month: | |
| - November's statistics can be found at the following http address: | |
| * http://adswwww.colorado.edu/reports/status.Nov94 | |
| - Statistics for all months can be found at the following http address: | |
| * http://adswwww.colorado.edu/reports/reports.html | |

Approved: _____ G. Eichhorn
 Achievement: _____ J. Good (IPAC)

Status as of: 1 December 1994

OPERATIONS

ADS USER/USAGE STATISTICS:

	IPAC	IUE	PSU	SAO	HEASRC	STSCI	CASA	EUVE	NSSDC	APS
startup :	7		3	9	4	1	1	3	1	16
query :	256		0	99	33	21	105	0	12	377
schema :	246		0	100	33	21	105	0	12	370
retrieve :	12883		0	8484	276	410	400	0	20	93896
abort :	227		0	82	33	20	94	0	12	349
report :	2272		1689	1673	1664	1687	439	1631	1889	1740

- startup* - Gives the number of hard startx ups of the SQLserver at the given node location
- query* - Records how many queries users sent to that particular node.
- schema* - Retrieves the query result file format (i.e., table header and number of records found). It therefore represents the number of successfully completed queries (though not necessarily transferred back to the user).
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- abort* - Records each time a query session ends. Currently, this can signal either that the user requested a termination or that all the data had been transferred.
- report* - Records the number of inquiries about the current status of the SQLserver program. Such inquiries can only be issued by the srvadm program.

Abstracts

user	logins	queries	short	long	list
2471	7783	9612	357722	15691	

- users* - Number of distinct users using the abstract service
- logins* - Number of logins into the abstract service
- queries* - Number of queries sent to the abstract service (one specification of authors, keywords, titles etc is one query. One query may return thousands of abstracts).
- short* - Number of lines of short abstract information retrieved (authors and titles).
- long* - Number of complete abstracts retrieved (authors, titles, keywords, author affiliation, journal information, abstract text).

ASTROPHYSICS DATA SYSTEM

NASA Grant NCCW-0024

**Monthly Progress Report No. 34
for December 1994**

Prepared for

**National Aeronautics and Space Administration
Astrophysics Division - Code SZ**

**Smithsonian Institution
Astrophysical Observatory
Cambridge, Massachusetts 02138**

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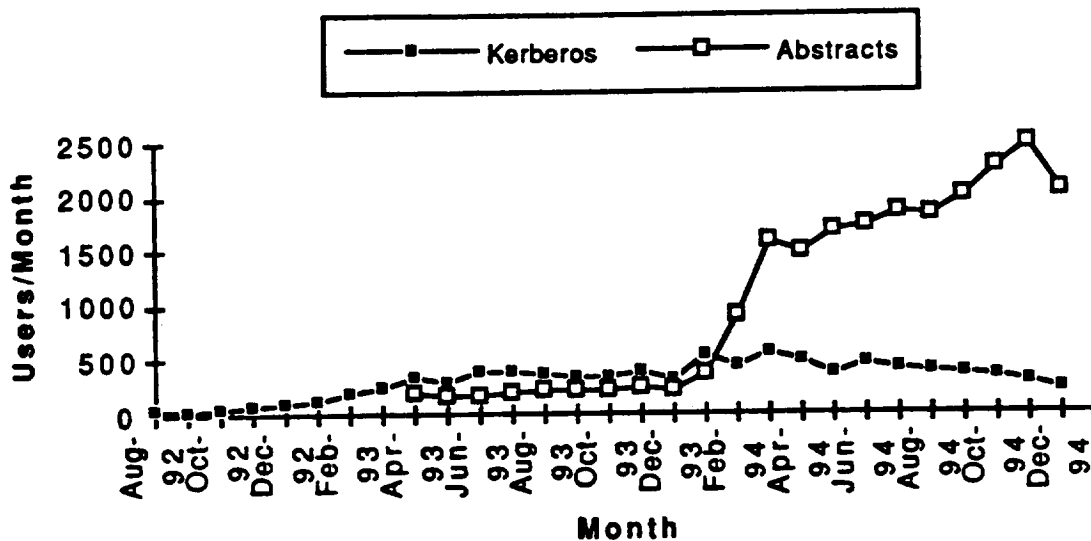
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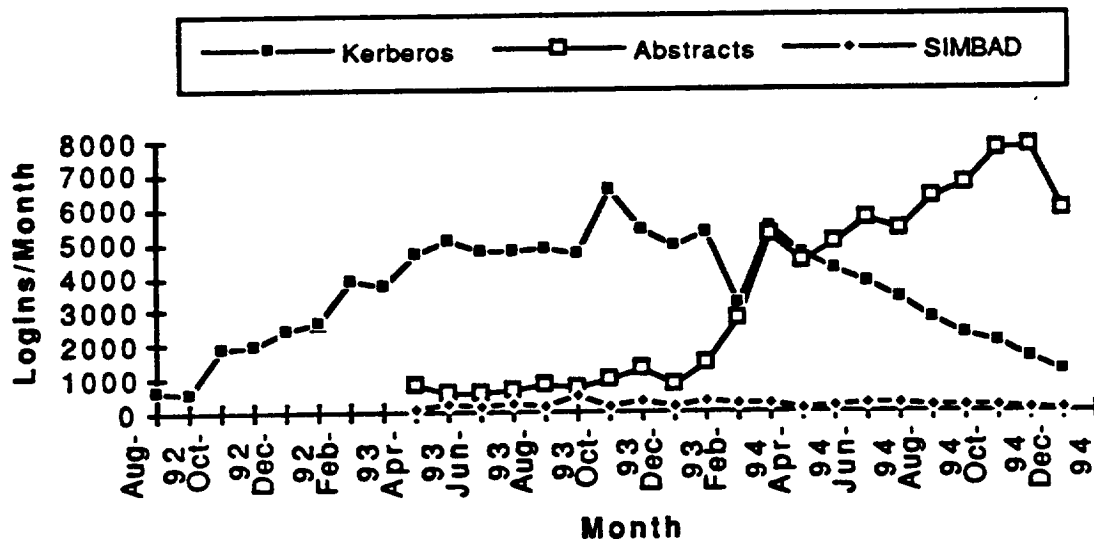
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Achievement: _____ G. Eichhorn (SAO)

Status as of: 1 January, 1994

Number of Distinct Users



Number of Logins



Approved: _____ G. Eichhorn
 Achievement: _____ T. Snow (CASA)

Status as of: 1 January 1995

USER SUPPORT

CASA:

TASKS ACCOMPLISHED:

- Total new users:	20
- Total new US users:	10
- Total new non-US users :	10
- Total registered users:	2368
- Total US users:	1737
- Total non-US users :	631
- Answered questions: (includes the following)	32
info_request: registration and installation requests	4
reg_forms: completed registration forms (12 from WWW)	20
info_change: requests to change status, email,	1
new_password: requests for new password (forgot old one)	5
how_to_qs: questions about how to use the ADS	1
install_qs: questions concerning installation	1
error_qs: questions concerning minor errors	1
general_qs: all other questions	3
not_compat: messages concerning non-compatible systems	
not_compat_PC: messages concerning PC's and Mac's	2
enhance_req: user suggested enhancements	
kudos: happy comments :-)	
comments: other user comments	
phone calls: phone calls from users	2
- Resolved problems: resolved major problems (series of messages)	5
• ADS Operational Web Server Statistics for the month:	
- December's statistics can be found at the following http address:	
* http://adswwww.colorado.edu/reports/status.Dec94	
- Statistics for all months can be found at the following http address:	
* http://adswwww.colorado.edu/reports/reports.html	

Approved: _____ G. Eichhorn
 Achievement: _____ J. Good (IPAC)

Status as of: 1 January 1995

OPERATIONS

ADS USER/USAGE STATISTICS:

	IPAC	IUE	PSU	SAO	HEASRC	STSCI	CASA	EUVE	NSSDC	APS
startup :	1		4	4	3	3	3	2		8
query :	62		0	19	9	20	138	2		63
schema :	60		0	19	9	20	133	2		62
retrieve :	442		0	742	25	1680	932	17		5209
abort :	62		0	9	8	19	108	2		58
report :	1489		1137	1147	951	1117	1151	924		1131

- startup - Gives the number of hard startx ups of the SQLserver at the given node location
- query - Records how many queries users sent to that particular node.
- schema - Retrieves the query result file format (i.e., table header and number of records found). It therefore represents the number of successfully completed queries (though not necessarily transferred back to the user).
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- report - Records the number of inquiries about the current status of the SQLserver program. Such inquiries can only be issued by the srvadm program.

Abstracts

user	logins	queries	references	abstracts
2042	5933	24913	435288	21742

- users - Number of distinct users using the abstract service
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ASTROPHYSICS DATA SYSTEM

NASA Grant NCCW-0024

Monthly Progress Report No. 35

for January 1995

Prepared for

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Status as of: 1 February 1995

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C. Cornuelle

Approved: _____ G. Eichhorn
Achievement: _____ T. Snow (CASA)

Status as of: 1 February 1995

USER SUPPORT

CASA:

TASKS ACCOMPLISHED:

January saw a flurry of activity related to the Classic ADS rampdown efforts. These activities are detailed below.

1. Final release of the Classic ADS, version 4.1.

This version includes the abstract service update, the secure file transfer server, and the AGRA skymapping utility.

The Classic ADS distribution is now through an anonymous FTP server at SAO (adsftp.harvard.edu). There are 6 tar files available - 2 for each platform; core and services.

2. Discontinued registration of new users for the Classic ADS

User ads with password ads has been added to the kerberos databases (master and slaves). All new user requests and requests for forgotten passwords will be directed to use this password and login starting in January.

The master kerberos database was moved from IPAC to SAO and the version 4.1 release krb.conf and krb.realms files were updated accordingly. Users running earlier versions of the Classic ADS may find some delays due to this switch.

3. Updated all the Colorado maintained Web user documentation for the Classic system. The updates included references to the ads login/password and strong encouragements for users to move to the WWW based system out of SAO. These updates affected the following documents:

ADS Classic System home page

ADS Classic System What's new

ADS Classic System FAQ file

CASA ADS node page

Many links to old documents like the registration form, the developer's guide, etc... were removed.

4. Reduction in Classic ADS User Support

We will continue to respond to email on the classic system but at a reduced level of effort. Users will be encouraged to use the Web services of the ADS instead of the classic system. The FAQ files will be kept up-to-date for users to get help. Two of the CASA ADS user support staff, Jacque Anderson and Doug Lindholm, have moved on to other positions at US West Advanced Technologies and NCAR. Their efforts in maintaining and operating the ADS user support office were very much appreciated.

5. Mass mailing sent to users notifying them of these changes.

A mass mailing was sent to all Classic ADS registered users informing them of these changes outlined above.

We have some concerns associated with the continued availability of resources and information assets that have been accessible through the Classic ADS. These assets include the ADC CDrom datasets offered through IPAC. We will be working with IPAC & SAO to try and continue to offer these resources through either the CASA or SAO nodes.

ASTROPHYSICS DATA SYSTEM

NASA Grant NCCW-0024

Monthly Progress Report No. 36

for February 1995

Prepared for

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Astrophysics Division - Code SZ

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Status as of: 1 March 1995

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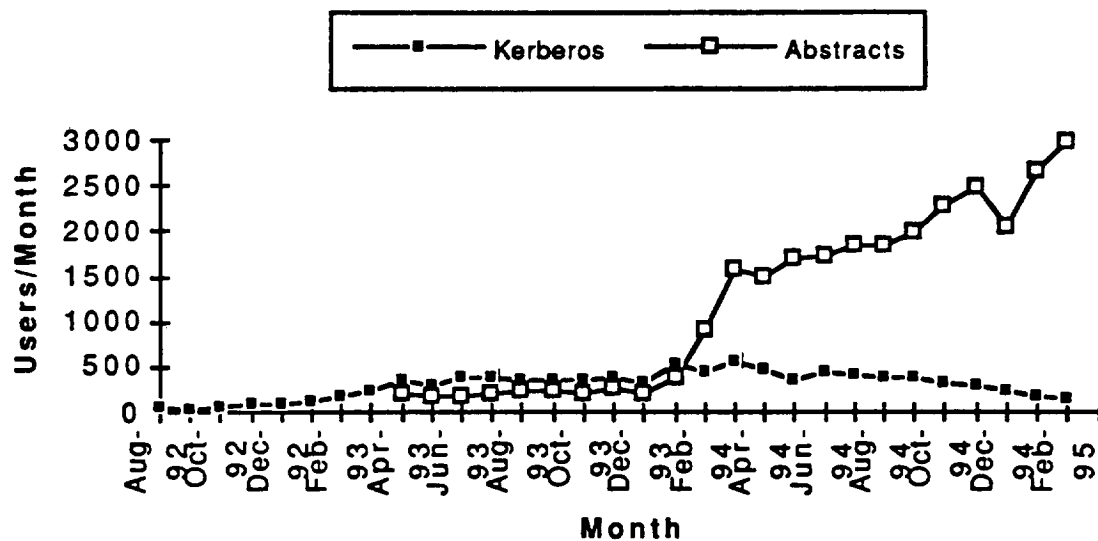
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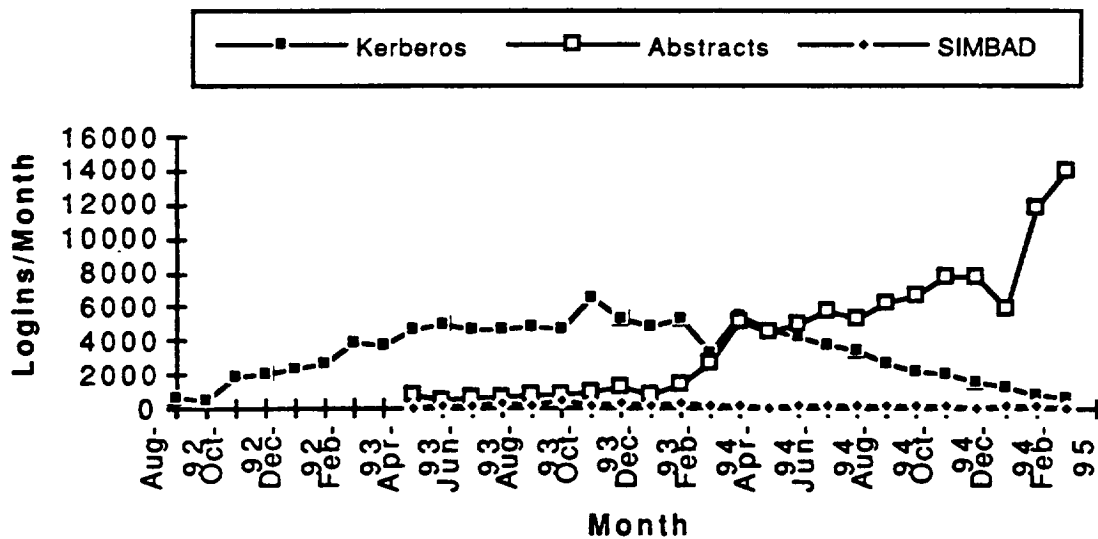
Approved: _____ S. Murray
Achievement: _____ G. Eichhorn (SAO)

Status as of: 1 March, 1994

Number of Distinct Users



Number of Logins



Approved: _____ G. Eichhorn
Achievement: _____ T. Snow (CASA)

Status as of: 1 March 1995

USER SUPPORT

CASA:

TASKS ACCOMPLISHED:

February activities for the ADS included the following:

1. We started work on consolidating all of the ADC CDrom databases. This includes the CASA served databases and the IPAC served databases. This consolidation would also provide a more efficient use of the existing disk drives on our database server. This effort may involve minor downtimes for the CASA served databases in March.
2. The mass mailing list and perl transmission program was sent to SAO.
3. User support activities continued by answering user questions primarily via email. A number of users expressed frustration with their inability to access the IPAC catalogs, hence, item #1 above.

Approved: _____ G. Eichhorn
 Achievement: _____ J. Good (IPAC)

Status as of: 1 March 1995

OPERATIONS

ADS USER/USAGE STATISTICS:

	IPAC	IUE	PSU	SAO	HEASRC	STSCI	CASA	EUVE	NSSDC	APS
startup :			1	6		1	0	1		10
query :			0	41		32	52	1		77
schema :			0	41		32	46	1		75
retrieve :			0	65		424	8069	1		3931
abort :			0	32		32	46	1		77
report :			27	32		20	13	45		60

- startup* - Gives the number of hard startx ups of the SQLserver at the given node location
- query* - Records how many queries users sent to that particular node.
- schema* - Retrieves the query result file format (i.e., table header and number of records found). It therefore represents the number of successfully completed queries (though not necessarily transferred back to the user).
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- report* - Records the number of inquiries about the current status of the SQLserver program. Such inquiries can only be issued by the srvadm program.

Abstracts

user	logins	queries	references	abstracts	article pages
2978	14054	31697	544613	24643	4942

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- logins* - Number of logins into the abstract service
- queries* - Number of queries sent to the abstract service (one specification of authors, keywords, titles etc is one query. One query may return thousands of abstracts).
- references* - Number of lines of short abstract information retrieved (authors and titles).
- abstracts* - Number of complete abstracts retrieved (authors, titles, keywords, author affiliation, journal information, abstract text).

ASTROPHYSICS DATA SYSTEM

NASA Grant NCCW-0024

Monthly Progress Report No. 37
for March 1995

Prepared for

National Aeronautics and Space Administration
Astrophysics Division - Code SZ

Smithsonian Institution
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Status as of: 1 April 1995

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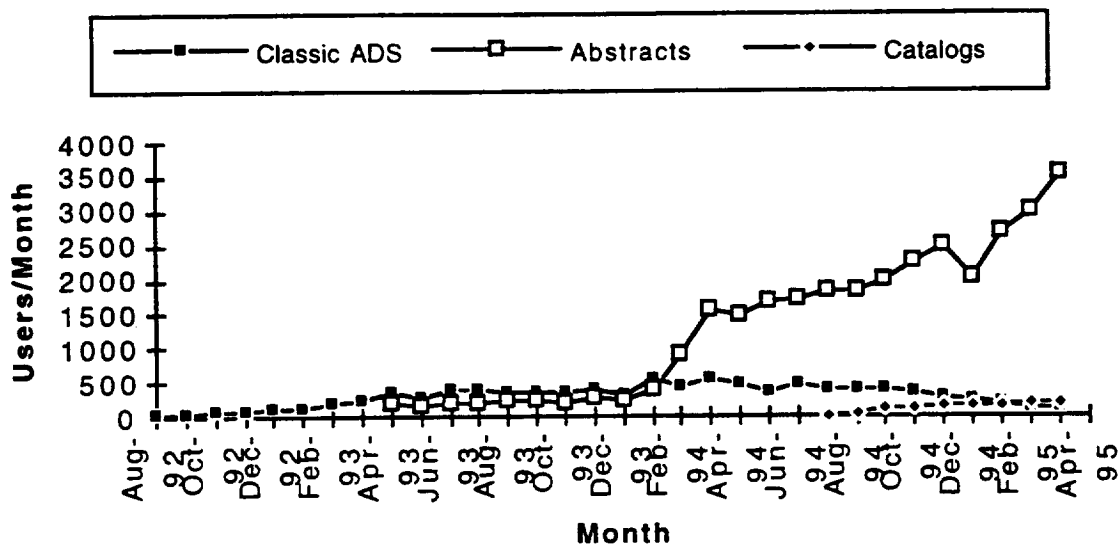
U. Minn:

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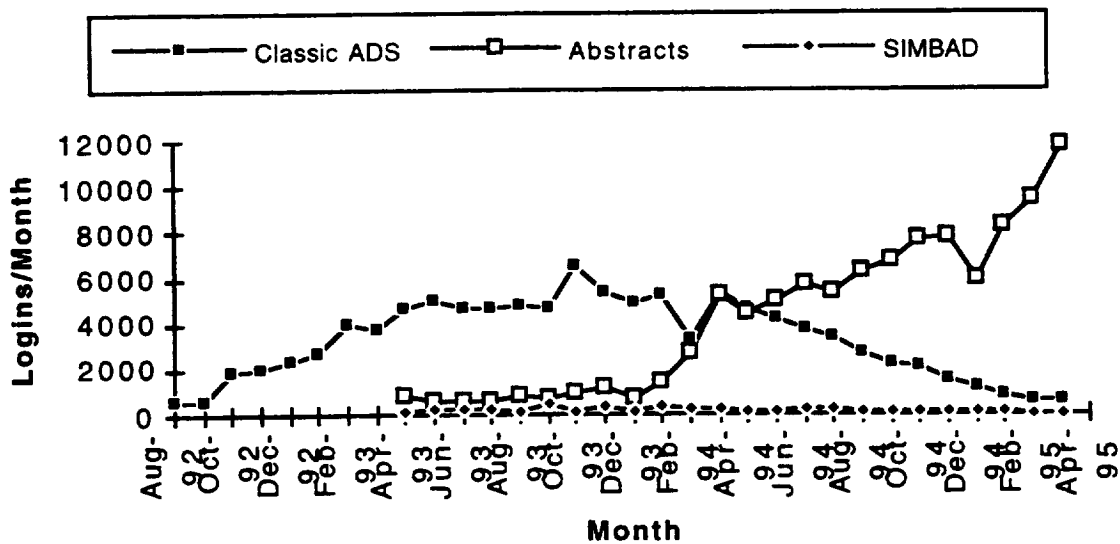
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Achievement: _____ G. Eichhorn (SAO)

Status as of: 1 April, 1994

Number of Distinct Users



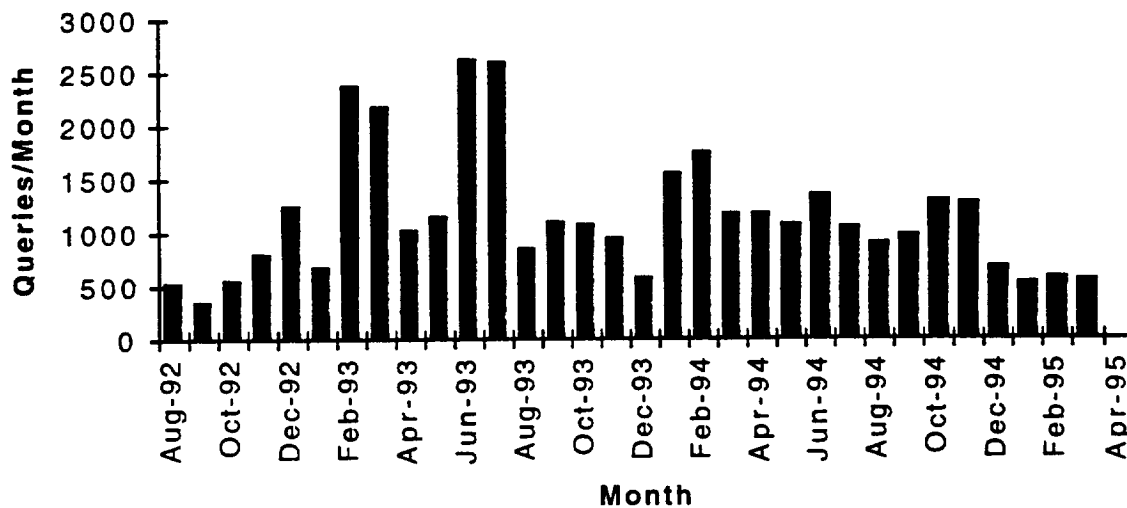
Number of Logins



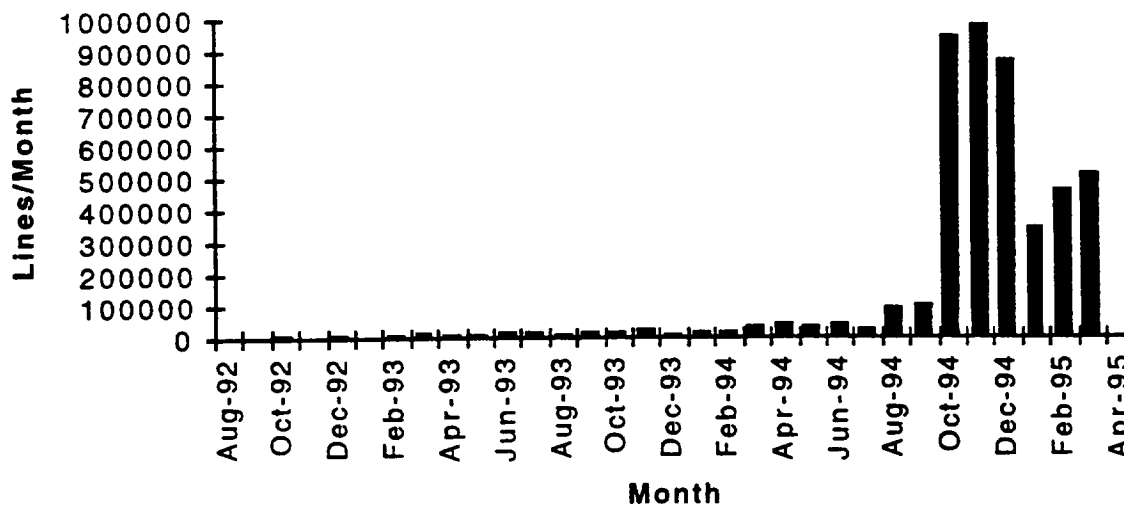
Approved: _____ S. Murray
Achievement: _____ G. Eichhorn (SAO)

Status as of: 1 April, 1994

Number of SQL Server Queries



Number of Retrieved Catalog Lines



SAO

ASTROPHYSICS DATA SYSTEM

Approved: _____ G. Eichhorn
Achievement: _____ S. Murray (SAO)

Status as of: 1 April 1995

DEVELOPMENT

SAO

TASKS ACCOMPLISHED:

Abstract Service:

- Updated abstracts in the database.
- Corrected errors in bibliographic codes from SIMBAD (incorrect volumes and years).
- Implemented "available items" in abstract results list which allows users to see at a glance if there is a NASA abstract, author abstract, data table, full journal article, etc.

Engineering Abstract Service:

- Began working on loading the engineering data into a separate engineering database.
- Created list of all words used in the engineering abstracts so that a synonym list can be developed.

Article Service:

- Sent test batch of ApJ journals to new scanning company for evaluation of their scanning services.

Miscellaneous:

- Responded to user comments about the Abstract and Article Services.
- Finished book browse program for putting books online through ADS. Brought up Martin Zombeck's reference book as a test case.

ASTROPHYSICS DATA SYSTEM

NASA Grant NCCW-0024

Monthly Progress Report No. 38

for April 1995

Prepared for

National Aeronautics and Space Administration
Astrophysics Division - Code SZ

Smithsonian Institution
Astrophysical Observatory
Cambridge, Massachusetts 02138

The Smithsonian Astrophysical Observatory
is a member of the
Harvard-Smithsonian Center for Astrophysics

Approved: _____ S. Murray
Achievement: _____ G. Eichhorn (SAO)

Status as of: 1 May 1995

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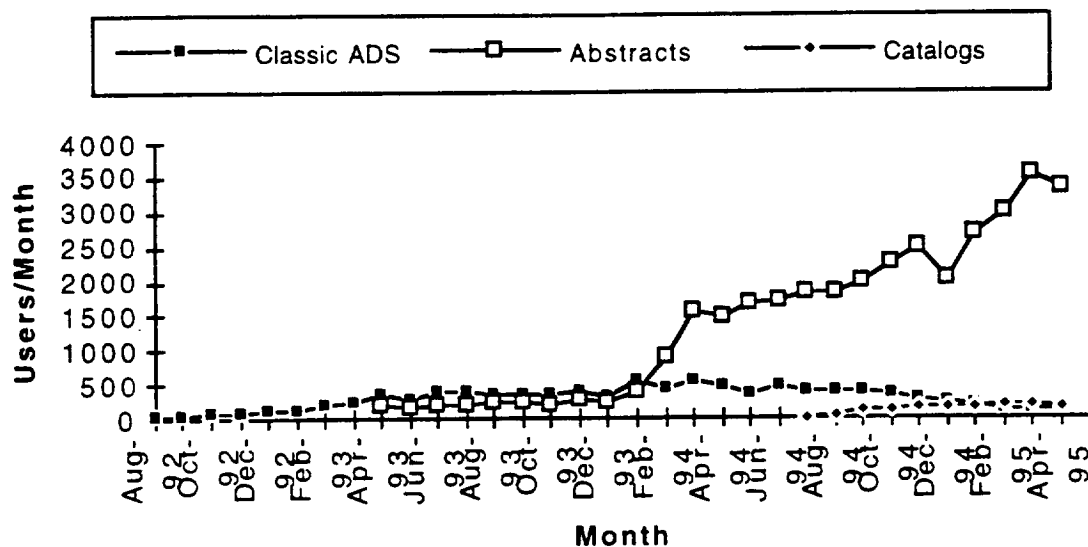
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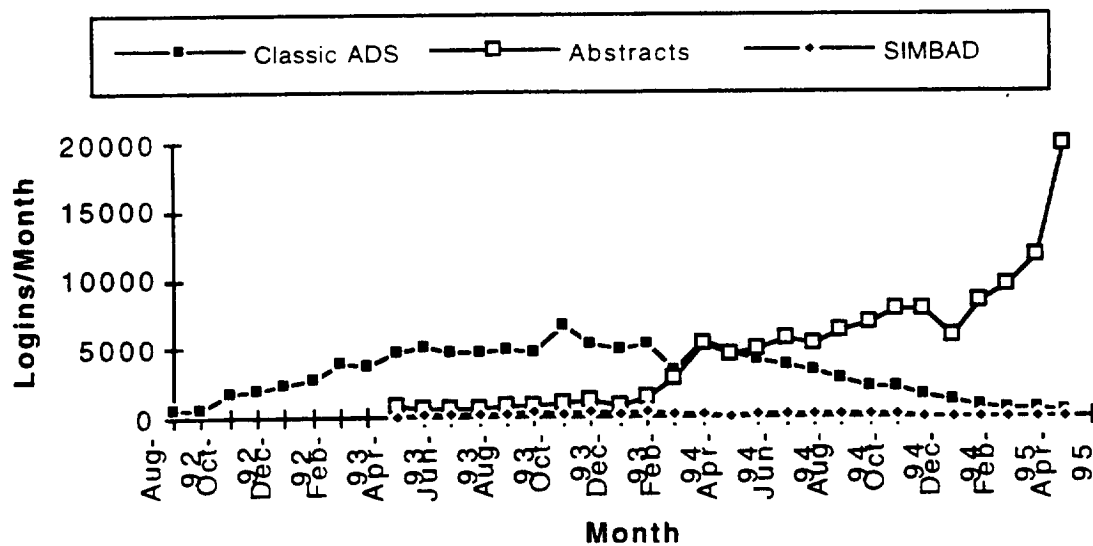
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Achievement: _____ G. Eichhorn (SAO)

Number of Distinct Users



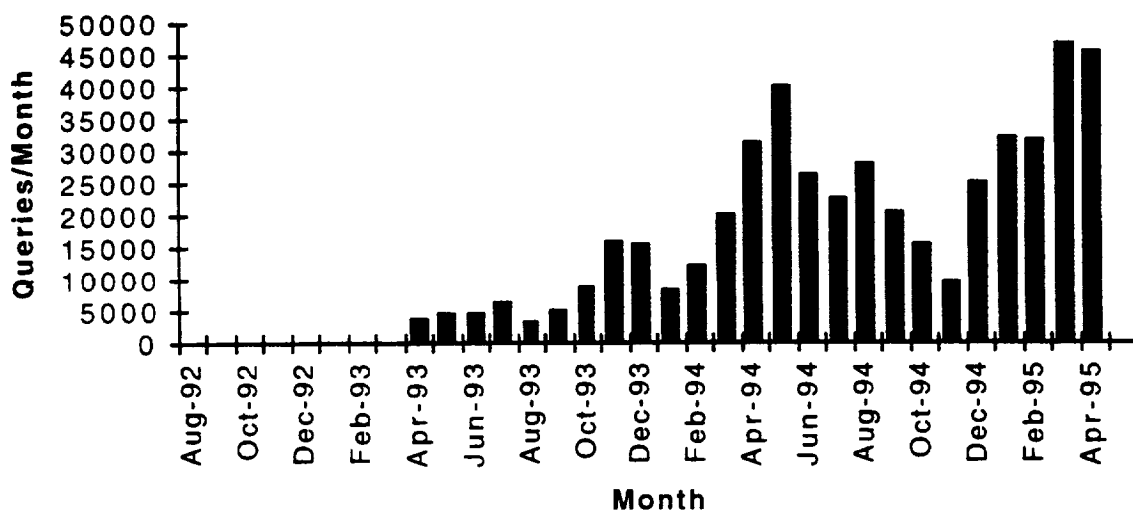
Number of Logins



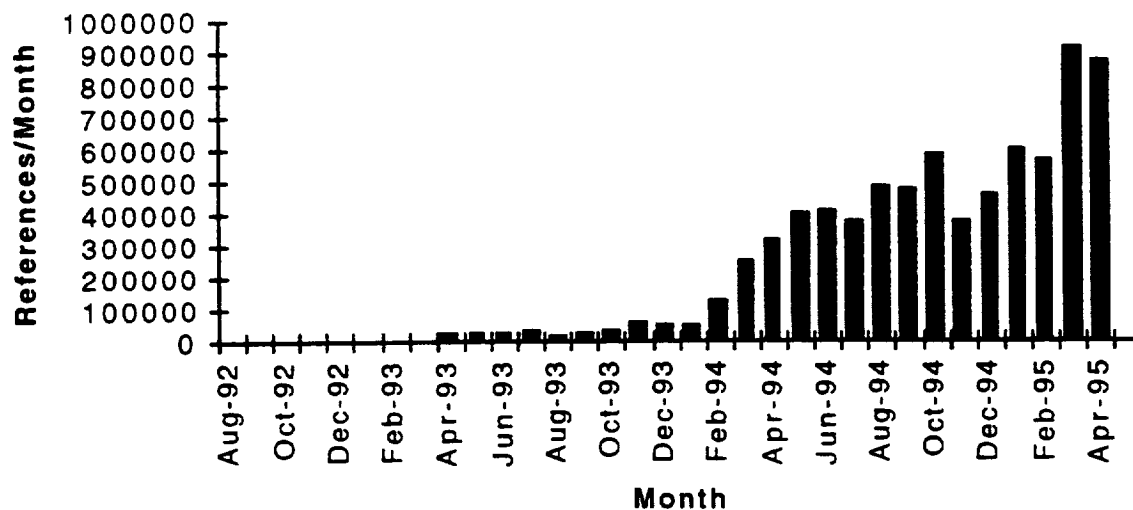
Approved: _____ S. Murray
Achievement: _____ G. Eichhorn (SAO)

Status as of: 1 May, 1994

Number of Abstract Queries



Number of Retrieved References



Approved: _____ G. Eichhorn
Achievement: _____ S. Murray (SAO)

Status as of: 1 April 1995

DEVELOPMENT

SAO

TASKS ACCOMPLISHED:

Abstract Service:

- Updated abstracts in the database.
- Updated abstract service to allow for retrieval of author names with umlauts with or without the double vowel.
- Began work to better correlate our bibcodes with Simbad bibcodes.

Engineering Abstract Service:

- Continued the loading of 272,000 abstracts from the engineering category.

Article Service:

- Evaluated test batch of ApJ scans from the new scanning company.
- Began work on parsing software for Adj OCR'd table of contents.

NIST Archive Service:

- Updated the NIST archive service to return information error messages when the host computer is down.

Digital Library:

- Wrote software for on-line browsing and printing of books for the ADS digital library.
- Wrote software to reduce the book scans to a format suitable for WWW browsing and printing.
- Processed and put on-line one volume of SAO Annals and one volume of HCO Annals.

Miscellaneous:

- Attended the international conference "Weaving the Astronomical Web" and gave an oral presentation on the ADS abstract and article services.
- Collaborated with the ESO/ECF group to allow direct WWW access of the ADS abstract service from the ESO observing proposal database.
- Responded to user comments about the Abstract and Article Services.
- Updated cfa_redshift catalog with new data.
- Entered five new catalogs from the ADC CDROM into the Catalog Service:

bsc5	Bright Star Catalog, 5 th Edition
fk5	Fifth Fundamental Catalogue (FK5)
gcvs	General Catalogue of Variable Stars
rc2	Second Reference Catalogue of Bright Galaxies
sao2000	Smithsonian Astrophysical Observatory Star Catalog

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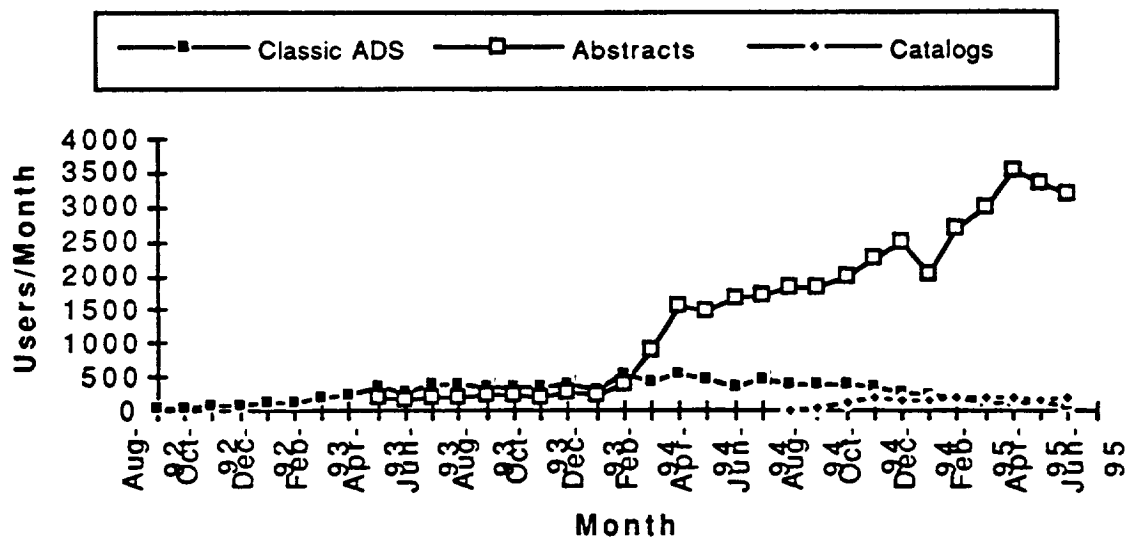
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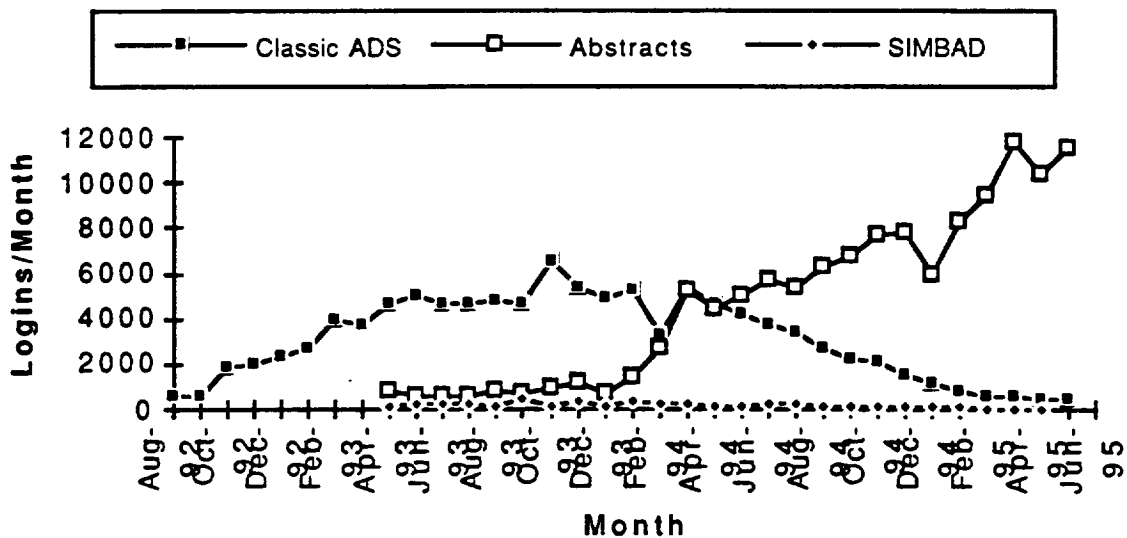
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Status as of: 1 June, 1994

Number of Distinct Users



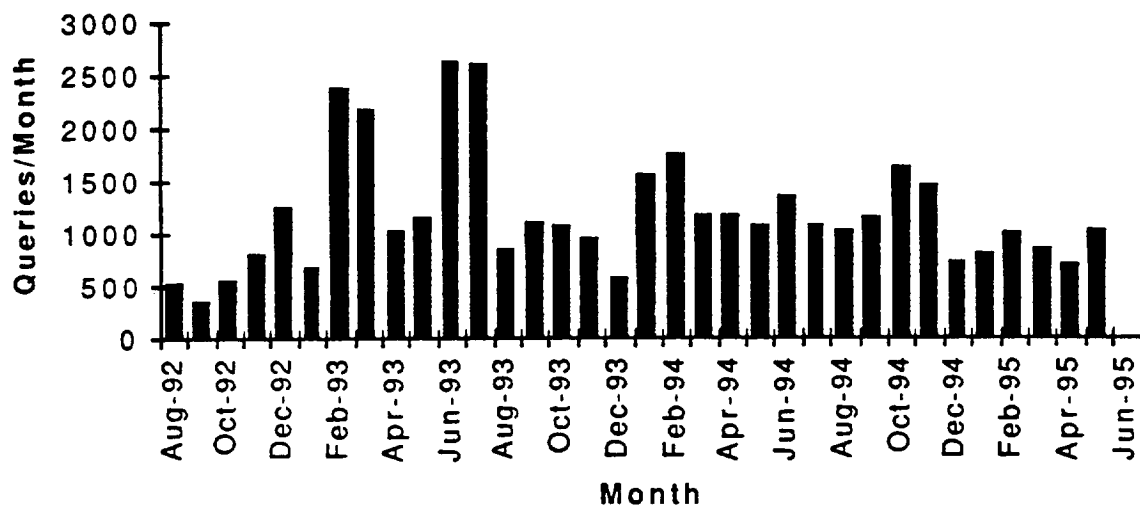
Number of Logins



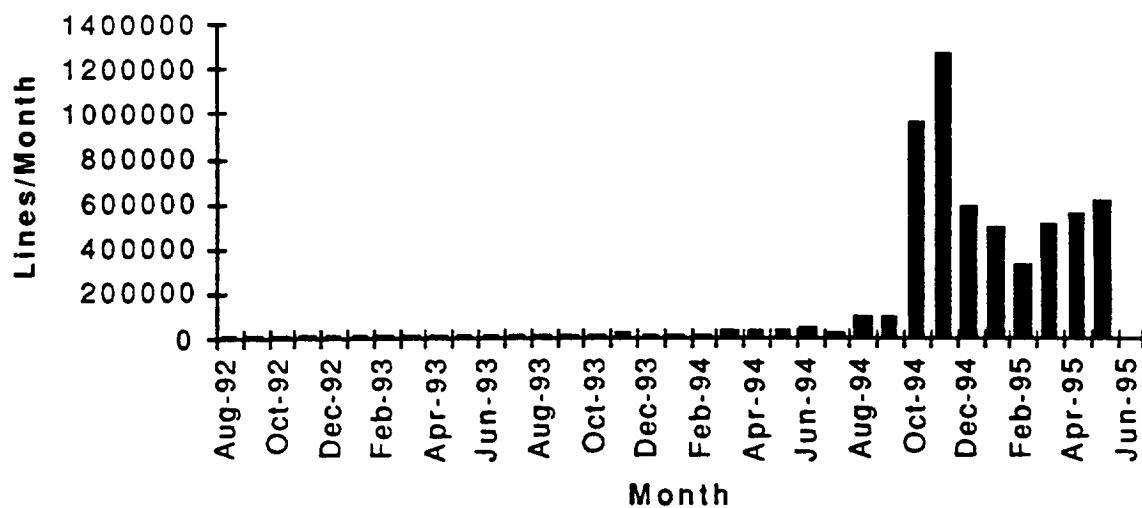
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Status as of: 1 June, 1994

Number of SQL Server Queries



Number of Retrieved Catalog Lines



Approved: _____ G. Eichhorn
Achievement: _____ S. Murray (SAO)

Status as of: 1 June 1995

DEVELOPMENT

SAO

TASKS ACCOMPLISHED:

Abstract Service:

- Updated abstracts in the database.
- Obtained permission from PASP and added PASP original author abstracts since 1993.
- Rewrote and improved the bibcode assignment and un-duplication routines used in the data reduction for the ADS abstract database.

Instrumentation Abstract Service:

- Finished loading and indexing abstracts from the instrumentation categories.
- Announced availability of these abstracts to mailing lists, "what's new" lists, etc.
- Began arrangements to demonstrate at the SPIE meeting in July.

Article Service:

- Wrote software for the on-demand generation of PostScript level 1 files from TIFF G4 files to allow us to clear some disk space.
- Inspected ApJ scans for the year 1992 received from the scanning company.
- Processed the available files into images to be used for the ADS article service demonstration at the upcoming AAS meeting.

Miscellaneous:

- Installed and tested the new version of the NCSA HTTP daemon on the ADS WWW server. Upgraded the current daemon to it.
- Responded to user comments about the Abstract and Article Services.

ASTROPHYSICS DATA SYSTEM

NASA Grant NCCW-0024

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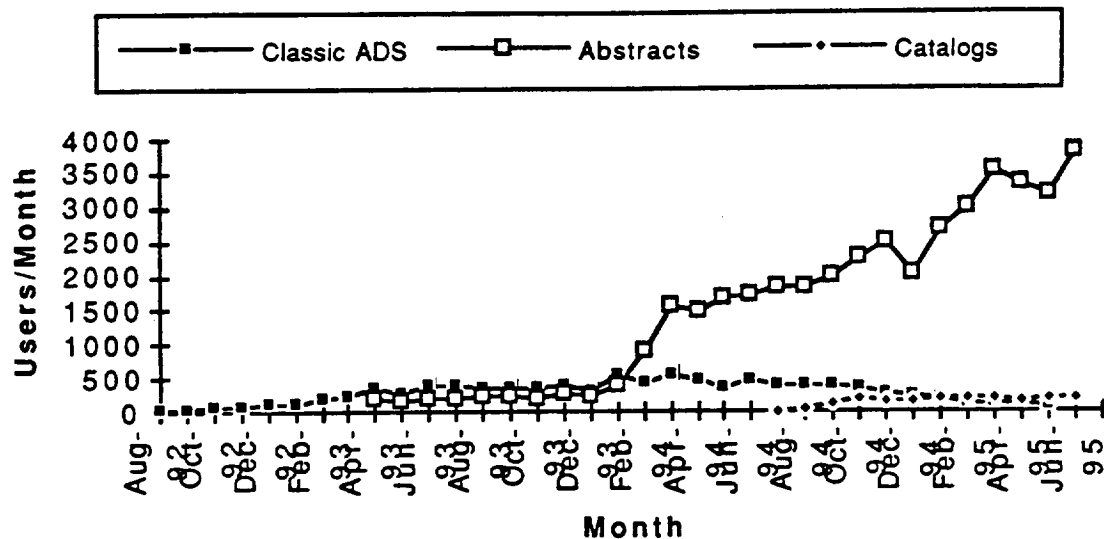
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C. Cornuelle

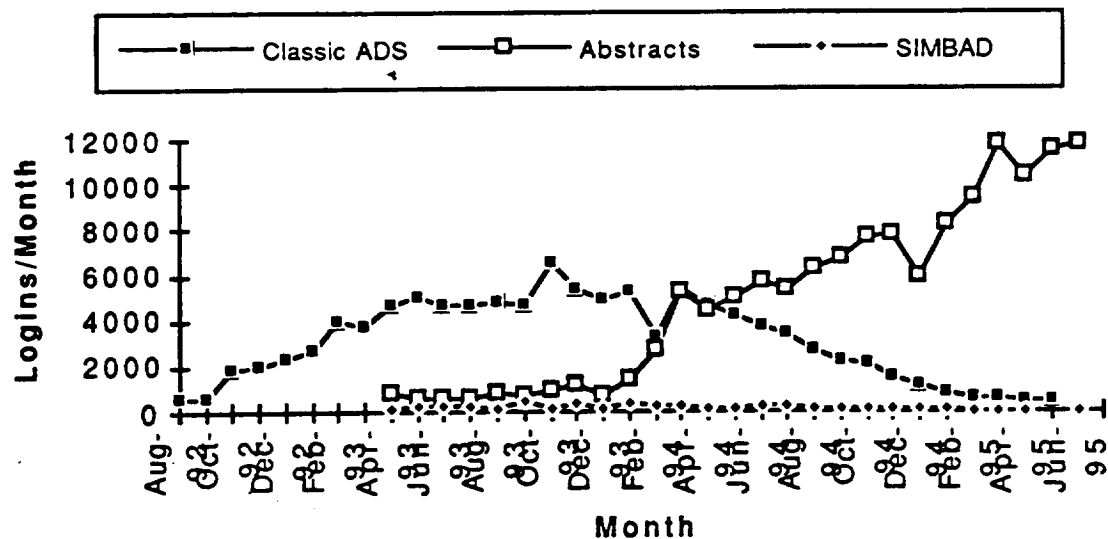
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Status as of: 1 July, 1994

Number of Distinct Users



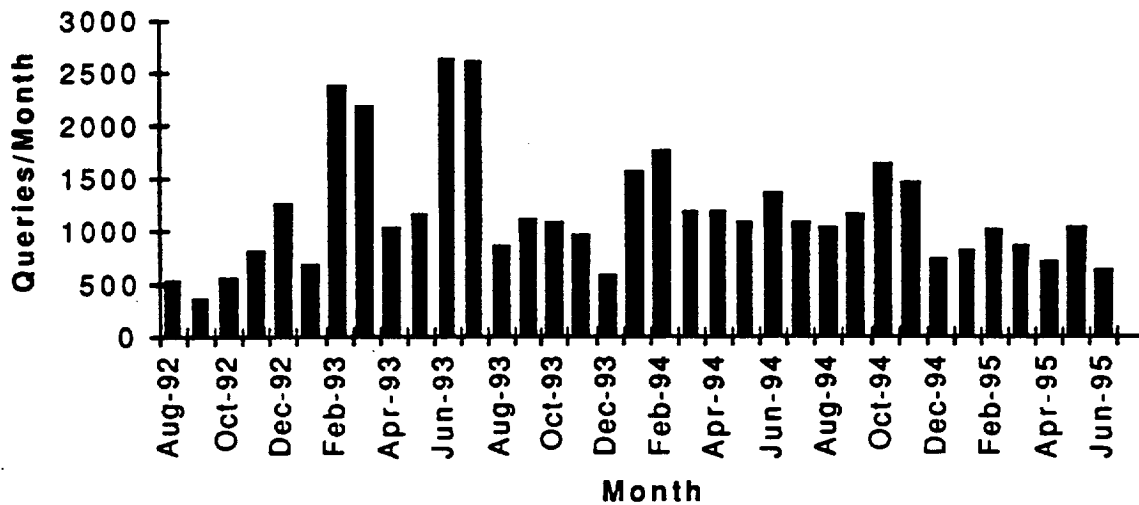
Number of Logins



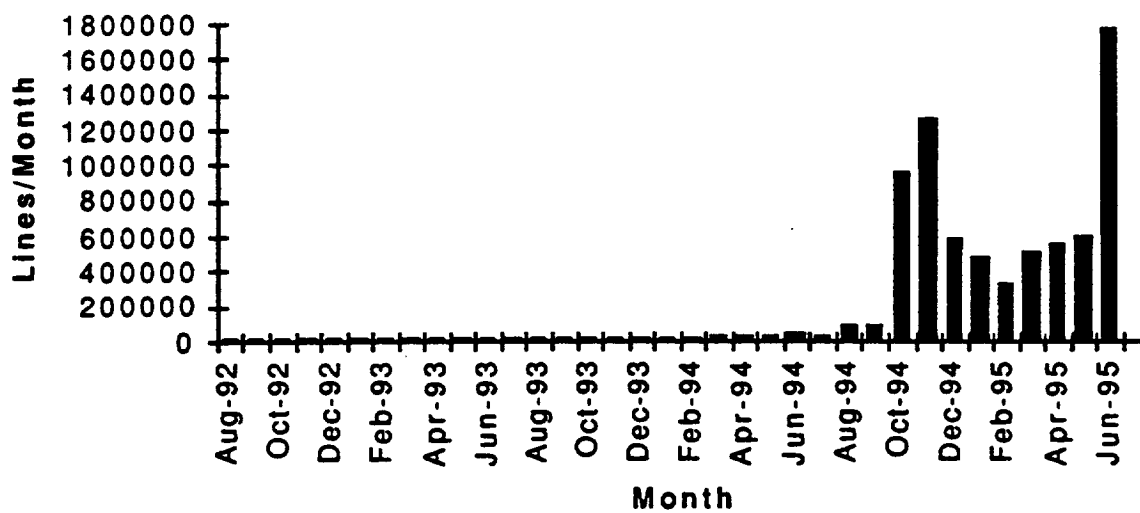
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Status as of: 1 July, 1994

Number of SQL Server Queries



Number of Retrieved Catalog Lines



Approved: _____ G. Eichhorn
Achievement: _____ S. Murray (SAO)

Status as of: 1 July 1995

DEVELOPMENT

SAO

TASKS ACCOMPLISHED:

Abstract Service:

- Updated abstracts in the database.
- Began work on adding BAAS abstracts since 1992, obtained from AAS.
- Enhanced abstract indexing software to handle case-sensitive stop words (so that searching on "AM Her" will work better).
- Added synonyms for foreign language titles used in the abstract service so that searching will work for those abstracts as well.
- Added a feature to automatically submit missing abstracts via a form on the World Wide Web.

Instrumentation Abstract Service:

- Updated abstracts in the database.
- Renamed abstracts which require unduplicating according to new algorithm for assigning unique bibliographic codes.

Article Service:

- Processed and put online ApJ files from 18 volumes from 1992 for the ADS article service demonstration at the AAS meeting.

Digital Library Service:

- Implemented server logging for the ADS digital library service.

Miscellaneous:

- Responded to user comments about the Abstract and Article Services.
- Attended the AAS meeting in Pittsburgh and gave on-site demonstrations.
- Added "Two Micron Sky Survey" to catalog service.

ASTROPHYSICS DATA SYSTEM

NASA Grant NCCW-0024

Monthly Progress Report No. 40
for July 1995

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Astrophysics Division - Code SZ

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ASTROPHYSICS DATA SYSTEM

Approved: _____ G. Eichhorn
Achievement: _____ T. Snow (CASA)

Status as of: 1 August 1995

USER SUPPORT

CASA:

TASKS ACCOMPLISHED:

July activities for the ADS work at CASA included the following:

1. User support activities continued by answering user questions primarily via email.
2. Work is wrapping up on sorting and cleaning up ADS related files both electronic and hardcopy as part of the Classic ADS system rampdown. We anticipate this work to be complete by the end of the summer.

Approved: _____ G. Eichhorn
 Achievement: _____ J. Good (IPAC)

Status as of: 1 August 1995

OPERATIONS

ADS USER/USAGE STATISTICS:

	PSU	SAO	STSCI	CASA	EUVE	APS
startup :	1	3	1	0	6	12
query :	0	7	0	4	0	33
schema :	0	7	0	4	0	33
retrieve :	0	8	0	5	0	4398
abort :	0	7	0	4	0	31
report :	18	16	12	16	14	46

- startup* - Gives the number of hard startx ups of the SQLserver at the given node location
- query* - Records how many queries users sent to that particular node.
- schema* - Retrieves the query result file format (i.e., table header and number of records found). It therefore represents the number of successfully completed queries (though not necessarily transferred back to the user).
- retrieve* - Records all user requests to bring data from a successful query back to the user location. Data is returned one screen at a time, and a retrieve is issued for each screen of returned data, whether that screen has one or more lines of data.
- abort* - Records each time a query session ends. Currently, this can signal either that the user requested a termination or that all the data had been transferred.
- report* - Records the number of inquiries about the current status of the SQLserver program. Such inquiries can only be issued by the srvadm program.

Abstracts

user	logins	queries	references	abstracts	article pages
3963	12123	54053	1136823	81575	8385

- users* - Number of distinct users using the abstract service
- logins* - Number of logins into the abstract service
- queries* - Number of queries sent to the abstract service (one specification of authors, keywords, titles etc is one query. One query may return thousands of abstracts).
- references* - Number of lines of short abstract information retrieved (authors and titles).
- abstracts* - Number of complete abstracts retrieved (authors, titles, keywords, author affiliation, journal information, abstract text).

